CALIFORNIA COASTAL COMMISSION

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Staff:	AJP-LB
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Hearing Date:	11/14-17/00

STAFF REPORT: REGULAR CALENDAR

APPLICATION NUMBER: 5-00-384

APPLICANT: State of California Department of Transportation- District 7

PROJECT LOCATION: Vincent Thomas Bridge, Port of Los Angeles

PROJECT DESCRIPTION: Permanent installation of 12 (200 to 1,125- watt) floodlights; eight (7,000-watt) fixed pencil beam Xenon lights; approximately 160 (175 watt) marine grade jelly jar light fixtures; glare shields; and eight 8-foot in diameter parabolic reflective discs to an existing bridge (Vincent Thomas Bridge) that spans the northern portion of the main channel of the Los Angeles Harbor.

LOCAL APPROVALS RECEIVED: N/A

SUBSTANTIVE FILE DOCUMENTS: *Technical Report to Assess the potential impacts of the Vincent Thomas Bridge Lighting Project*, by California Department of Transportation, District 7; *Urban Sky Glow and the Lighting of the Vincent Thomas Bridge*, by Kevin W. Houser, PhD.,LC; Categorical Exemption No. 991008 (CEQA).

SUMMARY OF STAFF RECOMMENDATION:

Staff is recommending approval of the proposed development with special conditions addressing protection of migratory bird species by limiting the daily hours of operation and prohibiting the operation during overcast/foggy weather conditions and during the bird's migratory periods.

STAFF NOTE: The proposed project is located within the jurisdictional boundary of the Port of Los Angeles. The proposed coastal development permit application has been submitted to the Commission because the project is not listed in the port master plan as a permitted use. Since the project is not listed in the port master plan the Commission has permit authority. As an improvement to an existing road or highway which is not principally for internal circulation within the port boundaries, the project is

an appealable project under Section 30715(a)(3). Therefore, the project will be evaluated for conformance with the Coastal Act by using the applicable Chapter 3 policies of the Coastal Act.

II. MOTION, STAFF RECOMMENDATION AND RESOLUTION FOR 5-00-384:

Staff recommends that the Commission make the following motion and adopt the following resolution:

MOTION: *I move that the Commission approve Coastal Development Permit #**5-00-384** pursuant to the staff recommendation.*

STAFF RECOMMENDATION OF APPROVAL:

Staff recommends a **YES** vote. Passage of this motion will result in approval of the permit as conditioned and adoption of the following resolution and findings. The motion passes only by affirmative vote of a majority of the Commissioners present.

RESOLUTION TO APPROVE THE PERMIT:

The Commission hereby approves a permit, subject to the conditions below, for the proposed development and adopts the findings set forth below on grounds that the development as conditioned will be in conformity with the provisions of Chapter 3 of the California Coastal Act and will not prejudice the ability of the local government having jurisdiction over the area to prepare a local coastal program conforming to the provisions of Chapter 3. Approval of the permit complies with the California Environmental Quality Act because either 1) feasible mitigation measures and/ or alternatives have been incorporated to substantially lessen any significant adverse effects of the development on the environment, or 2) there are no further feasible mitigation measures or alternative that would substantially lessen any significant adverse impacts of the development on the environment.

III. STANDARD CONDITIONS:

1. Notice of Receipt and Acknowledgment. The permit is not valid and development shall not commence until a copy of the permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.

2. Expiration. If development has not commenced, the permit will expire two years from the date this permit is reported to the Commission. Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.

3. Interpretation. Any questions of intent or interpretation of any condition will be resolved by the Executive Director or the Commission.

4. Assignment. The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.

5. Terms and Conditions Run with the Land. These terms and conditions shall be perpetual, and it is the intention of the Commission and the permittee to bind all future owners and possessors of the subject property to the terms and conditions.

IV. SPECIAL CONDITIONS

1. Period and Hours of Operation

Prior to the issuance of the permit the applicant shall submit a written agreement for review and approval by the Executive Director, that provides that the lights shall operate only between the hours of sunset to 11:00 p.m., except as listed below when the lights are required to remain off:

1) During the fall (August through October) and spring (March through May) migratory bird period.

2) During overcast or foggy weather conditions (horizontal visibility reduced to less than 1,000 meters) throughout the year, the lights shall be turned off and shall remain off until the overcast or foggy conditions have cleared in the area surrounding the bridge.

2. Automated Shut-off System for Overcast/Foggy Weather Conditions

Prior to the issuance of the permit the applicant shall provide evidence, for the review and approval of the Executive Director, that demonstrates that the applicant will incorporate an automated system to measure overcast or foggy weather conditions (horizontal visibility reduced to less than 1,000 meters) and that further shows that the measurements will be incorporated into the automated operating light system so that when overcast or foggy weather conditions arise at the bridge the lights will automatically shut-off and will remain off until the overcast or foggy conditions have dissipated.

3. Future Bird Mortality

The applicant shall agree in writing, subject to the review and approval of the Executive Director, if any significant mortality of birds is observed, the lights shall be turned off immediately until the Coastal Commission, California Department of Fish and Game, and the U.S. Fish and Wildlife Service are notified and an appropriate course of action is identified by the three agencies. The course of action may include the permanent discontinuance of the lights. Based on the course of action identified by the agencies, the Executive Director shall determine if an amendment to this permit is required.

V. FINDINGS AND DECLARATIONS:

The Commission hereby finds and declares:

A. Project Description and Location

The applicant is proposing to permanently install 12 (200 to 1,125 watt) floodlights; eight (7,000-watt) fixed pencil beam Xenon lights; approximately 160 (175 watt) marine grade jelly jar light fixtures; glare shields; and eight 8-foot in diameter parabolic reflective discs to an existing bridge (Vincent Thomas Bridge) that spans the northern portion of the main channel of the Los Angeles Harbor (see Exhibit No. 1 & 2).

The twelve floodlights and eight fixed pencil beam Xenon lights will be located along the two bridge towers. Eight floodlights will be located at the lower strut, near the base of the towers, and will light the underside of the bridge. Four floodlights will be located at midheight to illuminate parabolic art disks located on each tower at the midheight level. The eight Xenon lights will be located along the outermost side of each tower at the midheight level. One Xenon light will direct light up along the outermost side of the tower, and another Xenon light will direct light down the tower (see Exhibit No. 4 and 9). At the top of each tower there will be a decorative convex art piece (shield) that will prevent any light from spilling into the atmosphere (see Exhibit No. 6). All floodlights and Xenon lights are proposed with 360-degree glare shields.

The 160 marine grade jelly jar light fixtures will be located along the horizontal span, below the roadway (see Exhibit No. 4 & 8).

The location and direction of the lighting, as proposed, will result in the illumination of the entire outermost side of each tower and the horizontal span. All proposed lighting is for decorative purposes to visually enhance the bridge at night.

The Vincent Thomas Bridge crosses over the northern portion of the Los Angeles Main Channel in an east-west direction, connecting the San Pedro area of the City of Los Angeles with Terminal Island in the Port of Los Angeles (see Exhibit No.1). The bridge is a 4-lane suspension bridge built in 1963. The bridge is 1,500 feet long between towers, with back spans of approximately 506 feet on either side (see Exhibit No. 2). The two bridge towers consists of two columns or spires. The towers are located on land on either side of the Los Angeles Main Channel. The towers extend to a height of 335 feet above ground level (335 feet above sea level). The area immediately surrounding the bridge is primarily industrial, with cruise ship docks, cargo loading and storage yards and other port related facilities.

The bridge is part of State Route 47, which is under the jurisdiction of the California Department of Transportation, who is the applicant of this project. The sponsors of the project are the City of Los Angeles, Los Angeles Harbor Department, Department of Water and Power, Vincent Thomas Bridge Lighting Committee, and the Shuwa Corporation.

As an improvement to an existing road or highway, which is not principally for internal circulation within the port boundaries, the project is an appealable project under Section 3015(a)(3) of the Coastal Act. As an appealable project and a project located within the jurisdiction of the port, the project will be evaluated for conformance with the Coastal Act by using the applicable Chapter 3 policies of the Coastal Act.

A similar project was before the Commission in November 1999 (Coastal Development Permit application #5-99-377). The project in 1999 included 120 floodlights to light the horizontal span and towers, and 4 Xenon lights located atop each tower to direct light straight into the sky. The initial lighting was to be permanent, with lights intended to be on nightly from approximately sunset to sunrise.

The Dept. of Fish and Game and the Fish and Wildlife Service verbally expressed to staff initial concern with the lighting of the bridge and the potential adverse impact on migratory birds. During the public hearing the Commission heard public testimony from a number of environmental and astronomical groups and scientists that expressed concerns with regards to the light impacts. Because of concerns with potential impacts to birds and potential visual impacts, due to increase illumination, the Commission denied the permit application.

Based on these concerns and the Commission action, the City of Los Angeles and Caltrans has had numerous meetings and discussions with the Dept. of Fish and Game and the Fish and Wildlife Service, the environmental and astronomical groups that initially expressed concern with the project, and Commission staff. From the information and input from these meetings the City of Los Angeles and Caltrans revised the lighting design to address the concerns that had been raised. The proposed project that is before the Commission is a product of the City's and Caltrans effort to design a project that is sensitive to those concerns.

B. Environmental Resources

Chapter 3 Polices

Section 30230 of the Coastal Act states:

> Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.

Section 30240 of the Coastal Act states in part:

> (a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.
>
> (b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.

The issue the proposed project raises is the potential impact the lights may have on the various bird species that migrate through the harbor, resident bird species, and to fish within the harbor.

The harbor and surrounding area is located along the Pacific Flyway. The Pacific Flyway is the path that migratory birds follow along the Pacific Coast during their annual migrations. Millions of shorebirds and waterfowl travel between northern breeding grounds and southern wintering sites. The Pacific Flyway originates in Western Alaska, around the Yukon River Delta, and extends as far south as Latin America. The peak periods for migration through southern California are March through May and August through October.

Both migratory shorebirds and neotropical songbirds either come to this area to breed or pass through here on their way to other locations. While the majority of shorebirds migrate during the day, there are some that fly at night. Most songbirds are nocturnal migrants. Wetlands and coastal bays are stopover sites for resting and feeding birds.

According to the applicant a list of approximately 340 species of birds that have been seen at or near Ken Malloy Harbor Regional Park (located about 3 miles northwest of the Vincent Thomas Bridge) has recently been compiled from a variety of sources (Heindel, 2000). This list was cross-checked with a list of neotropical migrant birds (Rappole, 1995) to identify the migrant species that are likely to fly in the vicinity of the Vincent Thomas Bridge. Exhibit 10.b. provides a list of birds likely to be found in the area. According to the applicant, of the species listed, most of the song birds, a large number of the waterfowl and shorebirds, and a variety of other types of birds are nocturnal migrants (Kerlinger and Moore, 1989).

Although there are no available specific studies about the nocturnal migrants and numbers of birds that fly over the harbor area, approximately 100,000 to 1,000,000 birds use Seal Beach, which is approximately 20 miles to the south, as a major stopover, according to the Caltrans technical report (see Exhibit No.10a).

In addition to the migratory birds that may fly through the area, the bridge itself is also home to a pair of American peregrine falcons (falco peregrinus). According to the Caltrans report the peregrines nest/roost on the steel-girders below the bridges' roadway between the two towers. The peregrine was recently removed from the federal endangered list. However, the peregrine is still protected under the federal Migratory Bird Treaty Act. As such, it is considered illegal to harm, harass or kill individuals of this species. The peregrine is also on the State's endangered list. The state Endangered Species Act protects listed species from being killed or harmed.

There have been many studies and reports that indicate that lights on tall structures can pose a problem for night migrating birds and cause mortalities among these birds (i.e. *Collision Course: The Hazards of Lighted Structures and Windows to Migrating Birds*, L.J.E. Ogden, September 1996; *The Effects of Overcast Skies on the Orientation of Free-flying Nocturnal Migrants,* K.P. Able, 1982; *The mechanisms of the trapping effect of artificial light sources upon animals*, F.J. Verheijen, Netherlands Journal of Zoology, 1958). However, studies that have been done are generally associated with tall (over 200 feet) communications towers that are generally located in rural sparely lit areas.

Mortalities associated with tall structures are referred to as tower-kills. These tower-kills have also been known to involve lighted monuments (e.g. the Washington Monument), smoke stacks and airport ceilometers. Most of the reports from the United States come from the eastern and central part of the county. There is no documentation regarding lighted bridges over waterways and the impacts to birds. However, this could be due to birds hitting bridge structures and falling into the water or being removed quickly by scavengers. Therefore, any mortality may go unnoticed.
Although it is not known for certain why birds fly into tall-lighted structures there is a significant amount of data that indicates that tall-lighted structures cause bird kills. The cumulative impact of illuminating additional structures in a highly developed and lighted area is also not known at this time.

The impact to the peregrine should not be significant since the birds nest/roost under the roadway within the bridge girders which will not be illuminated. The Caltrans report states that a peregrine expert and consultant/monitor for the Vincent Thomas Bridge seismic retrofit project, indicated that the proposed lighting would not adversely impact the peregrines. The Dept. of Fish and Game and Fish and Wildlife Service have reviewed the light design and have determined that there will be no significant impact to the peregrines or to fish that may be found in the channel.

According to reports, the birds most affected by lit towers are the neotropical migratory songbirds, in particular thrushes, vireos, and warblers. According to existing reports, there are two mechanisms for bird mortality that occur at communication towers. The first is when birds flying in poor visibility do not see the structure. Communication towers that are lighted at night for aviation safety may help reduce bird collisions caused by poor visibility, but the lights bring about a second mechanism for mortality. When there is a low cloud ceiling or foggy conditions, lights on a tower refract off water particles in the air creating an illuminated area around the tower. Migrating birds have lost their stellar cues for nocturnal migration in these weather conditions. When passing the lighted area, the increased visibility around the tower may become the strongest cue the birds have for navigation, and thus they tend to remain in the lighted space by the tower. Mortality may occur when they run into the structure and its guy wires, or even other migrating birds as more and more passing birds cram into the relatively small, lighted space. Other birds may fly around in circles around the light source until they become exhausted and fall from the sky.

The exact magnitude of the problem is unknown. The Caltrans report states that on January 22, 1998, in western Kansas, an estimated 10,000 Lapland lonspurs were killed at, and in the vicinity of, three towers and a natural gas pumping facility.

In Florida, a 25-year study on bird mortality associated with a communication tower just north of Lake Iamonia, was conducted by ornithologists stationed at a nearby research station. Over the 25-year period, 42,386 birds were found scattered beneath the tower (*Blinking lights mark scenes of death for birds*, by Jim Cox, Tallahassee Democrat).

The Caltrans report states that:

> Many other incidents involving up to, and in some cases more than, 1,000 birds are noted in an annotated bibliography prepared by the U.S. Fish and Wildlife Service's (the Service) Office of Migratory Bird Management (Trapp, 1998). In 1979, the Service estimated an annual mortality at around 1.4 million birds (Manville, 1999). Today's conservative estimate is upwards of 4 million birds killed per year.

The Vincent Thomas Bridge is currently lit with flashing red navigational lights on the top of each bridge tower. According to reports, birds are thought to be less sensitive to flashing red lights than to other forms of light. The Caltrans report indicates that bridge maintenance crews have not reported finding any dead birds near or on the bridge. However, the report further states that it is possible that any existing problem would go unnoticed because the birds could fall in the water or be quickly removed by scavengers.

As stated, the Port of Los Angeles is developed with numerous industrial and port related facilities. With such development there are numerous lights throughout the Port area. These lights are located on/in buildings, on cargo cranes that extend to approximately 150 feet in height, and large multi-acre parking and cargo storage lots.

Based on visual observation, the port area surrounding the two towers is well lit (see arial photographs, Exhibit No. 17a., b. & c.) due to 24 hour port operations and safety concerns. The applicant has submitted a recent light report (*Urban Sky Glow and the Lighting of the Vincent Thomas Bridge*, Kevin W Houser, Ph.D) that was prepared for the applicant, to address the issue of the amount of light the project will create in the area (see No. 11). The study involved: 1) direct measurements of sky luminance in the region around the Port of Los Angeles, and 2) estimation of the increase in sky glow at Palomar Observatory that would likely result from the proposed lighting.

Based on the information compiled, the report concludes that based on direct quantitative measurements the sky above the Port of Los Angeles is considerably brighter than the sky in the surrounding areas. Because of the existing light conditions at the port, the report indicates that the increase in urban sky glow as a result of the proposed project would not be significant. Using an empirical formula ("Walkers Law") to estimate urban sky glow the report estimates that the sky glow would increase by 0.029%. According to the report, the estimate is based on conservative assumptions and using more realistic assumptions the actual increase would be less than 0.008%.

According to reports on sky glow, there are two mechanisms that contribute to increases in sky glow: 1) an increase in atmospheric particulates, and 2) additional lighting spilling into the atmosphere. The report prepared for the project states that if lighting is held constant, the magnitude of sky glow is a function of the atmospheric conditions at any fixed ground location. An increase in atmospheric particulates may result from an increase in pollution, clouds, humidity, and/or other airborne matter.

As stated, the area surrounding the Vincent Thomas Bridge is a highly developed industrial area and is brightly illuminated. The lighting in the port is generally with high/low pressure sodium lights that produce light in wavelengths in yellow or orange light. These type of lights are used because the light within this wavelength travels farther in fog and haze. The lights proposed to light the bridge structure will be metal halide and xenon sources that produce a white light. This type of light was chosen over the more efficient high/low

pressure sodium lights to minimize the amount of sky glow. The Jelly Jar light fixtures will be provide a soft low intensity blue light.

Based on the lighting report, the additional lighting will not significantly increase the overall sky glow in the area. However, the use of any light will still produce stray light. The amount of stray light can be minimized by the type of lights used, directional orientation, and shielding. As proposed the applicant has designed the lighting with good optics, is focusing light directly on to the structure, and providing 360 degree glare shields. With these proposed measures the amount of light escaping into the atmosphere will be significantly reduced. However, even with responsible design, light will invariably spill into the surrounding atmosphere and the amount of sky glow will increase with an increase in atomospheric particulates, such as during over-cast or foggy conditions.

The Fish and Wildlife Service, and environmental groups, have expressed concerns with the lights during these periods of inclement weather, which creates the greatest potential impact to migratory birds. To address this issue the applicant is proposing additional measures that will further minimize the amount of sky glow during overcast or foggy conditions, and during the fall and spring neotropical bird migratory periods. To ensure that the lights will not adversely impact birds during overcast or foggy conditions, the applicant is proposing to turn off the lights during foggy conditions that may occur throughout the year. The applicant has indicated that weather conditions will be monitored at the port and the lights will be turned off manually or electronically if overcast/foggy weather conditions are observed by bridge maintenance staff [By definition, fog is present when small water droplets near the ground are dense enough to reduce horizontal visibility to less than 1 km (5/8 mile)]. However, if determining weather conditions is based on an individual's visual observation, there is the possibility of error and/or neglect. To ensure that the lights will be turned-off during foggy conditions the lighting system needs to be connected to a measuring device that will automatically shut off the lights when foggy conditions arise. Therefore, a special condition is necessary to require the applicant to provide prior to the issuance of the permit, evidence demonstrating that the lighting system can be electronically connected to a devise that measures fog or water content in the air and will automatically shut off the lights when fog is present.

The applicant is also proposing to limit the hours of operation from sunset to 11:00 p.m. throughout the year, to avoid the peak migratory hours, which generally occur after 11:00 p.m. The lighting system will be connected to an astronomical clock that will turn the lights on at sunset, which varies depending on time of year, and off at the designated time. The applicant has also indicated that the lights will be turned off in a staggered sequence to allow birds, that may be in the area, to gradually adapt to the changing illumination. Fish and Wildlife Service and the Dept. of Fish and Game have reviewed these proposed mitigation measures and have determined that with the mitigation measures the proposed project will not have a significant impact to wildlife.

Therefore, based on the information provided, a special condition is necessary to require that the applicant will incorporate an operation plan that would limit the hours of operation to not exceed 11:00 p.m. on a nightly basis, to avoid operation during the fall and spring bird migratory periods, and to shut off the lights during periods of overcast or foggy environmental conditions. Furthermore, in the event that there is any significant mortality of birds, the lights shall be turned off immediately until the Coastal Commission, the California Department of Fish and Game and the U.S. Fish and Wildlife Service are notified and an appropriate course of action is identified. The Commission finds that, only as conditioned by this permit, will the project minimize any substantial adverse environmental impacts and be consistent with Section 30230 and 30240 of the Coastal Act.

C. California Environmental Quality Act

Section 13096 of the Commission's regulations requires Commission approval of Coastal Development Permit applications to be supported by a finding showing the application, as conditioned by any conditions of approval, to be consistent with any applicable requirements of the California Environmental Quality Act (CEQA). Section 21080.5(d)(2)(i) of CEQA prohibits a proposed development from being approved if there are feasible alternatives or feasible mitigation measures available, which would substantially lessen any significant adverse effect which the activity may have on the environment.

The proposed project, as conditioned, has been found to be consistent with the Chapter 3 policies of the Coastal Act. All adverse impacts have been mitigated by conditions of approval and there are no feasible alternatives or feasible mitigation measures available which would lessen any significant adverse impact the activity may have on the environment. Therefore, the Commission finds that the proposed project, only as conditioned, is consistent with CEQA and the policies of the Coastal Act.